



Construction Management Breadth

Introduction:

To determine the feasibility of the redesigned electrical system, an in depth cost analysis is necessary. It was difficult to determine the cost of the entire electrical system since many components have not been sized at this time, so only the cost of equipment that was changed in the redesign were considered. The existing design price and redesign price of this equipment were compared to determine the total cost difference between the two electrical systems. R.S. Means Electrical Construction Data 2006 served as the pricing guide for the electrical equipment.

Design Goals:

The main goal of this cost analysis is to determine the feasibility of the redesigned electrical system based on price. The cost of the smaller feeders and numerous step down transformers used in the redesign will be compared to the cost the existing design which specifies larger feeders and two larger transformers. Cost of the distribution panelboard will also be taken into account if it differs in the two systems.

Cost Analysis:

The table bellows shows a summary of the cost analysis performed. Please see Appendix B for a detailed documentation including the cost of each item that has been resized. These items include conductors, conduits, circuit breakers, transformers, and distribution panels. All feeder costs were based on a take off that was performed to determine the length of each feeder. Time and location factors were not taken into account since this analysis determines savings and not actual cost.

Cost Analysis:

	Existing System	Redesign
Conductor	\$95,518.08	\$41,289.63
Conduit	\$53,041.10	\$30,345.17
Circuit breakers	\$4,778.00	\$2,759.00
Transformers	\$26,000.00	\$54,500.00
Resized distribution panel EC	\$3,225.00	\$2,475.00
Total Cost	\$182,562.18	\$131,368.80

Conclusions:

If the redesigned electrical system had been installed in place of the existing system, \$51,193.38 would have been saved. The cost of the transformers for the redesigned system was much higher than for the existing system as expected, however the smaller, less costly conductors, conduits, circuit breakers, and distribution panel amounted in savings beyond the expense of the transformers. Extra storage space will be used to house the additional transformers; however it appears that this space is available. By using smaller wire, less space in the ceiling plenum will be crowded with wires. The redesigned system is a feasible alternative since a great deal of money is saved only at the expense of storage space.